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Procedia - Social and Behavioral Sciences 152 (2014) 708 – 713

Procedia
Social and Behavioral Sciences

ERPA 2014

Investigation of the relationships between educational internet use self-efficacy beliefs and self-regulated learning skills

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Abstract

This study aims at investigating the relationship between educational internet use self-efficacy beliefs and their self-regulatory learning skills. This research is designed as relational scanning model. The sample of this study, Environmental, Chemistry, Electrical-Electronics, Computer, Geology, Mining, Mechanical Engineering and Chemical department (355) final year students from the Faculty of Engineering has formed. In the study, Educational Internet Use Self-efficacy Beliefs Scale (EIUSBS), developed by Şahin (2009) and Self-regulating Learning Skills Scale (SRLSS), developed by Turan (2009) are used as tool of data collection.. In order to analyze the data, SPSS 16.00, ANOVA, independent t-test, Pearson correlation coefficient techniques are used. At the end of the study, between EIUSBS with SRLSS has a positive relation. The significant differences weren't found between gender and graduated secondary school with EIUSBS; but according to department, significant differences were found between with EIUSBS in favor of Computer Engineering department. The significant differences weren't found between department and graduated secondary school with SRLSS; but according to gender, significant differences were found between with SRLSS in favor of girls.

Peer-review under responsibility of the Organizing Committee of the ERPA Congress 2014.

Keywords: internet use self-efficacy; self-regulatory learning skills introduction.

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Peer-review under responsibility of the Organizing Committee of the ERPA Congress 2014.
doi:10.1016/j.sbspro.2014.09.308

1. Introduction

Information and communication technologies have tremendous effects on almost all aspects of our everyday life. Nowadays, as a part of communication technologies, contribution of computers and internet use on education has gained the attention among researchers. According to some researchers, communication technologies can be used in order to facilitate learning by enabling people to participate learning process actively.

Expansion of the usage of technology in various fields led a change in education programmes. Internet can be a very effective source for learning activities if planned correctly. Therefore teachers need to develop certain skills related to technology use. Research has demonstrated that educational technology becomes very effective in academic achievement (Cheung & Slavin, 2013). According to Şahin (2009), some of the educational internet use skills are; reaching information sources on the internet, sharing data, doing research about school projects, reading articles and journals, searching for educational software and web sites, watching and downloading course related videos, participating online examinations, doing research about course content, downloading e-books, using e-dictionaries, communicating with classmates via messengers, acquiring knowledge about laws and regulations on official government web sites and accessing library through the internet. Such skills are very important for gaining eligible information speedily.

Self-regulated learning means determining, regulating and trying to control one's own goals, motivation, behaviors and cognition. In other words, it emphasizes on autonomy and control by the individual who monitors, directs and regulates actions towards goals of acquiring information, expanding expertise and self-improvement (Paris & Paris, 2005). Students with self-regulated learning skills are able to manage their efforts on classroom assignments, eliminate distractions and perform better than others (Pintrich & De Groot, 1990). Self-regulated learning involves three features including, student's ability to use self-regulated learning strategies, student's responsiveness to self-oriented feedback about learning effectiveness and student's interdependent motivational processes (Zimmerman, 1990). Self-regulated learning skills help students achieve academic success by using learning strategies. Current developments in the educational system require teachers to go beyond classical knowledge transfer from teacher to student and find new methods to construct knowledge through self-regulated learning (Michalsky & Schecter, 2013). Research has shown that teachers can acquire the ability to implement teaching strategies and skills for promoting self-regulated learning in the classrooms (Perry, Phillips & Hutchinson; 2006).

2. Aim of the research

The aim of this research is to study the connections between educational internet use self-efficacy beliefs and self-regulatory learning skills of Engineering Faculty students.

Is there a connection between educational internet use self-efficacy beliefs and self-regulatory learning skills of Engineering Faculty students?

Sub Problems: 1.What are the levels of educational internet use self-efficacy beliefs and self-regulatory learning skills of students? 2. How do students' levels of educational internet use self-efficacy beliefs and self-regulatory learning skills vary according to the varieties of gender, department, and graduated secondary school? 3. Is there a connection between educational internet use self-efficacy beliefs and self-regulatory learning skills of Engineering Faculty students?

3. Methods of the research

In this study, quantitative research method and relational screening model has been used.

3.1. Sample of the research

The sample of this study is formed by 355 senior students from departments of Chemistry, Electrical-Electronics, Computer, Environmental, Geology, Mining, Mechanical Engineering and Chemical department from the Faculty of

Engineering. 38 of Students (10.7%) are from the department of Chemistry Engineering, 52 of them (14.6%) are from the department of Electrical-Electronics Engineering, 72 of them (20.3%) are from the department of Computer Engineering, 38 of them (10.7%) are from the department of Environmental Engineering, 30 of them (8.5%) are from the department of Geology Engineering, 33 of them (9.3%) are from the department of Mining Engineering, 36 of them (10.1%) are from the department of Mechanical Engineering, 56 of them (15.8%) are from the department of Chemistry, 158 of students (44.5%) are female and 197 of them (55.5%) are male.

3.2. Data collection instruments

Educational Internet Use Self-efficacy Beliefs Scale (EIUSBS) developed by Şahin (2009) consists of 28 items. As a result of the factor analysis made during the development of the scale, it has been stated that the scale is collected under one factor. The scale is prepared as five–point Likert type scale and the levels are shown as: Completely Competent=5, Quite Competent =4, Competent=3, Moderately Competent=2, Not Competent=1. The highest score to get from the scale is 140 and the lowest level is 28. The high scores show that the students see themselves competent in internet use for educational purposes and the low scores show that the students consider themselves inadequate in internet use for educational purposes. The Cronbach Alpha is applied to identify the internal consistency of the scale and the coefficient is found as .96 ($p<.001$).

Self-regulating Learning Skills Scale (SRLSS) developed by Turan (2009) to determine university students' self regulated learning skills was used as the data collection tool. The response range of the scale is from "definitely disagree" (1), "disagree" (2), "uncertain" (3), "agree" (4) to "completely agree" (5). The minimum and the maximum score that can be taken from the scale are between 41-205. Five-point Likert type scale includes 41 items and four subscales named "motivation and action to learning" (7 items), "planning and determining aims" (8 items), "strategy using and assessment" (19 items), and "lack of self-directedness" (7 items). These subscales are in harmony with the theoretical framework of the study. Cronbach's alpha reliability coefficients for the scale and four subscales were 0.91 and 0.88, 0.91, 0.83, 0.76 respectively (Turan, 2009).

3.3. Analyzing data

SPSS 16.00 is used to analyze the data. ANOVA, independent t-test and Post-Hoc test techniques have been conducted to monitor the scores taken from the scales in terms of demographic varieties. PEARSON correlation coefficient analysis technique is applied in order to observe the relations between scales.

4. Findings

The research findings are evaluated in the context of sub-problems.

Sub-Problem 1. What are the levels of educational internet use self-efficacy beliefs and self-regulatory learning skills of students?

The sample of this study is formed by 355 students from Engineering Faculty. The minimum and the maximum score that can be taken from the EIUSBS are between 28-140. In this study, the taken total EIUSBS score was calculated as 101.4676. The minimum and the maximum score that can be taken from the SRLSS are between 41-205. In this study, the taken total SRLSS score was calculated as 155.4394. (Table 1).

Table 1. Distribution of scores of students taken from SRLSS according to the factors and EIUSBS

	Scales	X	SD	SE
SRLSS	Motivation and Action to Learning	28.8197	19.17062	1.01747
	Planning and Determining Aims	31.6648	4.37393	.23214
	Strategy Using and Assessment	73.8704	5.10763	.27108
	Lack of Self-directedness	17.8958	11.10225	.58925
	SRLS S Total	155.4394	5.15937	.27383
	EIUSBS Total	101.4676	22.48140	1.19319

Sub-Problem 2. How do students' levels of educational internet use self-efficacy beliefs and self-regulatory learning skills vary according to the varieties of gender, department, and graduated secondary school?

As in table 2, as a result of independent group t-test applied to define whether the scores taken from the SRLSS and factors differentiate according to the gender variable; for the SRLSS total score, "Planning and Determining Aims" factor score and "Lack of Self-directedness" factor score the difference between the arithmetic average of the groups have been found statistically significant. Female students' score average is significantly higher than the Male students ($p<.05$). The result of independent group t-test applied to define whether the scores taken from the EIUSBS differentiate according to the gender variable; for the EIUSBS total score the difference between the arithmetic average of the groups have not been found statistically significant ($p>.05$).

Table 2. The results of Independent group t-test of the scores taken from SRLSS and factors and EIUSBS according to the gender variable of students.

Scales		Group	N	X	SD	SE	t- test		
							t	df	p
SRLSS	Motivation and Action to Learning	Female	158	28.9873	4.14081	.32943	.646	353	.519
		Male	197	28.6853	4.55829	.32476			
	Planning and Determining Aims	Female	158	32.5000	4.75749	.37849	2.785	353	.006
		Male	197	30.9949	5.28909	.37683			
	Strategy Using and Assessment	Female	158	74.4873	10.89658	.86689	.937	353	.349
		Male	197	73.3756	11.26766	.80279			
	Lack of Self-directedness	Female	158	18.8481	5.27363	.41955	3.154	353	.002
		Male	197	17.1320	4.94798	.35253			
	SRLSS Total	Female	158	158.2532	19.56467	1.55648	2.495	353	.013
		Male	197	153.1827	18.59194	1.32462			
	EIUSBS Total	Female	158	98.8987	22.65869	1.80263	-1.936	353	.054
		Male	197	103.5279	22.18097	1.58033			

As a result of ANOVA which is done in order to determine whether the SRLSS and factors and EIUSBS show a significant difference according to the department variable; for "Lack of self-directedness" factor and EIUSBS scores the difference between the arithmetic averages of the group has been found statistically significant. As a result of LSD test it has been stated that, Mechanical, Environmental, Chemistry Engineering and Chemistry students' score are significantly higher than Computer and Geology Engineering students' score, Electric-Electronics Engineering students' score are significantly higher than Computer, Geology and Mining Engineering students' score for the "Lack of self-directedness" factor. Computer engineering students' score are significantly higher than Chemistry, Electric-Electronics, Environmental, Mining, Mechanical Engineering and Chemistry department students' score for the EIUSBS scores. As a result of ANOVA which is done in order to determine whether the scores taken from the SRLSS and factors and EIUSBS show a significant difference according to the graduated secondary school variable; for both scale and factors scores the difference between the arithmetic average of the group has been found to be insignificant statistically.

Sub-Problem 3. Is there a connection between educational internet use self-efficacy beliefs and self-regulatory learning skills of Engineering Faculty students?

As a result of Pearson Multiplication Momentum Correlation Analysis, conducted to define the relations between the SRLSS and factors and EIUSBS; SRLSS score, "Motivation and Action to Learning" factor, "Planning and Determining Aims" factor, "Strategy Using and Assessment" factor scores have a significant positive relation with EIUSBS score (Table 3).

Table 3. Pearson Multiplication Momentum Correlation Analysis Results conducted to define factors relations of the scales.

SRLSS and Factors	EIUSBS
Motivation and Action to Learning	r=.415 (**)
Planning and Determining Aims	r=.336 (**)
Strategy Using and Assessment	r=.396(**)
Lack of Self-directedness	r=-.054
SRLSS Total	r=,395(**)

5. Discussion

Engineers candidates' Educational Internet Use Self-efficacy Beliefs were "Quite Competent" level. The research results of Yenilmez, Turgut, Anapa & Ersoy (2011), Tuncer & Özüt (2012), Kahraman, Yılmaz, Erkol & Yalçın (2013), were parallel with our results.

In this research it was found that the levels of Educational Internet Use Self-efficacy Beliefs of the engineer candidates do not differentiate according to the gender. Similar results have been taken in other researches (Kılıç & Coşkun, 2010; Ata & Baran, 2011; Tuncer & Özüt, 2012; Kahraman et al., 2013). According to the studies of Yenilmez et al. (2011) and Kaya, Balay & Adıgüzel (2014); Educational Internet Use Self-efficacy Beliefs of males compared to the beliefs of female were found to be significantly higher. Unlike, Baş's study (2011), the results were significantly in favor of female teachers.

The study held among the senior students of Environmental, Chemical, Electric-Electronic, Computer, Geology, Mining, Mechanical Engineering and Chemistry Department shows, that the Educational Internet Use Self-efficacy Belief levels has a significant difference according to the department variable. According to the results, Computer engineering students was found to be significantly higher scores in comparison with the senior students of Environmental, Chemical, Electric-Electronic, Geology, Mining, Mechanical Engineering and Chemistry Department. The study of Kaya et al. (2014) do not show a significant difference in terms of department variance.

The score averages of Educational Internet Use Self-efficacy Beliefs Scale of the engineer candidates don't significantly differentiate according to the graduated secondary school variance.

In this study, Engineers candidates' Self-Regulating Learning Skills scale score were at "agree" level. This value was parallel with the studies of Pokay & Blumenfeld Phyllis (1990), Pintrich & De Groot (1990), Ray, Garavalia & Gredler (2003), Ruban & Reis (2006), Turan & Demirel (2010).

When evaluated in terms of gender, for the total score of Self-regulating Learning Skills Scale, the factor scores of "Planning and determining aims" and "Lack of self-directedness" the difference among the arithmetic averages of the groups were statistically significant. Score averages of the female students have been found significantly higher than the male students. When the literature was analyzed, the studies showing no significant difference in terms of the gender (Sağırlı & Azapağası, 2009; Gömleksiz & Demiralp, 2012; Cebesoy, 2013) and saying that male students have better self-regulating strategies are present (Üredi and Üredi, 2005). However, generally, female students were seen as better users of self-regulating strategies (Kadıoğlu, Uzuntiryaki & Çapa Aydın, 2011; Şen, 2012; Akkaya, 2012; Özkal & Sucuoğlu, 2013; Yüksel, 2013).

When evaluated in terms of department variance, for "lack of self-directedness" factor score, there was a statistically significant difference but there was not a significant differentiation for the total scale score and for the other factors. According to this, for "lack of self-directedness" factor score, it was pointed out that the students of Mechanical, Environmental, Chemical Engineering and Chemistry department have higher score in comparison with the students of Computer and Geological Engineering, and Electronic Engineering students have significantly higher scores than the students of Computer, Geology, Mining Engineering.

The between EIUSB scale with SRLS scale and "Motivation and action to learning", "Planning and determining aims", "Strategy using and assessment" factors, have a positive significant relation.

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